The Importance of Wildlife to Saskatchewan Residents

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Using Infomation Supplied By Fern C. Filion, C.W.S. from The 1981 National Survey on the Importance of Wildlife to Canadians

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In addition, thanks is extended to Lois Koback for typing the manuscript, and to Jennifer Merkowsky for drafting the figures.

PREFACE

The national survey on the value of wildlife to Canadians was carried out in 1981 under the sponsorship of the Federal-Provincial Wildlife Conference. It was designed to determine the importance Canadians attach to wildlife and the role played by wildlife resources in the national and provincial economies.

This report presents the information from the national survey that was collected from Saskatchewan respondents, and notes any substantive differences between the Saskatchewan and the national results. Foresight on the part of those designing the survey has ensured that the results remain statistically valid for the individual provinces.

SUMMARY

A comprehensive survey conducted by Statistics Canada in 1982 and sponsored by federal, provincial and territorial government wildlife agencies and a number of non-government groups revealed that Canadian wildlife resources were highly valuable to the nation. The study, which questioned approximately 75,000 Canadians (7,000 of whom were Saskatchewan residents) from all regions and walks of life, gauged the importance of wildlife through questions on attitudes toward wildlife populations, participation in a number of wildlife-related activities, and related expenditures in 1981. The scope of this report is to present the collective responses of the Saskatchewan participants in this survey.

Wildlife-related activities emerged as a very prevalent form of recreation undertaken by Saskatchewan residents. In 1981, the majority of the Saskatchewan population 15 years of age and over was involved in some form of wildlife-related activity.

Eighty-six percent of the Saskatchewan population participated in some form of indirect wildlife-related activity in 1981. In other words, 617,000 adults engaged in such activities as watching wildlife films or TV programs, reading wildlife books or magazines, visiting game farms, zoos, aquariums, natural science museums, purchasing wildlife art, crafts or posters and joining wildlife organizations. An estimated $7.9 million were spent on wildlife organizations in the form of donations or membership fees. This expenditure amounted to an average of $109 per contributor.

In 1981 some 462,000 Saskatchewan residents fed, watched, studied or photographed wildlife around their home or cottage. An estimated $5.4 million were spent on these activities, with participants averaging expenditures of $12 per year. A total of 25.4 million days were spent engaged in these activities, averaging 54.9 per participant a year.

Approximately 325,000 persons encountered wildlife during trips or outings taken primarily for business or pleasure. About 96.0% of them declared that such encounters increased the enjoyment of their trip or outing significantly. These unplanned encounters with wildlife resulted in the spending of a significant amount of extra money during these trips, averaging $8 per participant, and totalling $2.6 million.

Many people made a special trip or outing in 1981 for the primary purpose of observing, photographing, feeding or studying wildlife. One out of every 6 Saskatchewan people undertook such trips and spent a total of $86.0 million. The average participant spent $715 and 15.9 days on these trips during the year.

One in every 7 Saskatchewan residents took part in hunting in 1981. Participants spent an estimated $54.3 million or about $508 per hunter. A total of 1.7 million hunting days were reported, with the average hunter spending 16.1 days hunting during the year.

The survey also revealed that Saskatchewan people value the conservation of wildlife. Eighty-three percent stated that maintaining abundant wildlife was important to them, and 84.0% felt that preserving endangered species is important. This highly favourable predisposition toward wildlife was reflected in the interest expressed by Saskatchewan residents to participate in a number of wildlife-related activities. A significantly higher proportion of respondents indicated interest in participating in hunting and in some non-hunting activities than actually did so.

Calculation of the overall economic impact of wildlife to the Saskatchewan economy revealed that the value of both the direct and indirect benefits was substantial. The 617,000 people (86.0% of the Saskatchewan population) who participate in wildlife-related recreational activities in a given year receive direct benefits that they declare to be worth $43 million annually. The annual enjoyment provided to those participants is equivalent to a capitalized economic value of $427 million.

The expenditures that participants make on wildlife-related recreational activities amount to almpst $173 million and provide a significant stimulus to the Saskatchewan economy in terms of Gross Business Production ($240 million), and Gross Domestic Product ($143 million). This economic stimulus supports about 4,400 jobs during the year and provides federal and provincial governments across Canada with tax revenues worth nearly $23 million.

These indicators of economic significance of wildlife are conservative because they exclude, among other factors, commercial and subsistence utilization of wildlife resources, and recreational utilization by non-residents of Canada.

The findings of this survey indicate the qualitative and especially the quantitative value of wildlife in Saskatchewan. These and other similar findings may have a significant impact on the future development of wildlife management in the province.

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1.0 Introduction

Wildlife has traditionally been regarded as a great Canadian heritage and a valuable natural resource. Federal and provincial governments have been charged with stewardship of this resource and have the legal responsibility for preserving, enhancing, and managing it for the present and future benefit of Canadians.

Wildlife has a direct impact on millions of Canadians, enhancing quality of life, and contributing significantly to the economy. However, there are few data that actually quantify the nature and extent of its value.

Wildlife management agencies across Canada recognized the need to better understand the nature, extent and importance of the interactions between wildlife populations and human populations. A better understanding of these interactions would aid management agencies in the planning and evaluation of wildlife policies and programs and in the protection of wildlife habitats.

In 1982, the federal, provincial and territorial governments of Canada, with the support of private non-government agencies, commissioned Statistics Canada to conduct a national survey to gain a comprehensive understanding of the value of wildlife to Canadians, and to the individual provinces and territories.

The aim of the survey was to collect data on the incidence and duration of participation of Canadians in wildlife-related activities and to assess the importance of wildlife to the public. Quantifying the importance of wildlife required the collection of data that reflected participation in a wide range of wildlife-related activities: consumptive and non-consumptive, residential and non-residential, primary and secondary in dimension. The national results were presented in The Importance of Wildlife to Canadians: Highlights of the 1981 National Survey (Filion et al, 1983).

Further analysis of the data was conducted to assess the economic impact of wildlife-related recreation to the national and provincial economies. The results were presented in a report entitled The Value of Wildlife to Canadians: An Executive Overview of the Recreational Economic Significance of Wildlife (Filion et al, 1985). The Saskatchewan results are also presented in this report.

1.1 Background and Methodology and 1.2 Structure and Scope of Report

The background and methodology and structure and scope of the report were identical to that presented in the Highlights of the 1981 National Survey: The Importance of Wildlife to Canadians Report (Filion et al, 1983, pp. 1-2), except for the narrowing of the scope to include just Saskatchewan data.

Definitions of terms used in this report can be found in Appendix B.

Confidence intervals for the results may be computed using the coefficients of variation and the formula presented in Appendix C.

1.3 Profile of the Saskatchewan Population

Throughout the report the Saskatchewan population aged 15 years and over was used as the base for the calculation of most percentages. In order to fully appreciate the significance of the profiles of participants in wildlife-related activities it is important to be aware of the proportional breakdown of the Saskatchewan population for key demographic factors.

Appendix A contains an illustration and table that show the profile of the Saskatchewan population by sex, age, urban-rural residence, and education in 1981. The table shows that of the estimated 720,161 Saskatchewan residents 15 years of age and over, those aged 25-34 are easily the largest cohort comprising 20.8% of the population, and that those 65 years of age and older were also more numerous. The other age groups were almost equally represented. The majority of

Saskatchewan residents had obtained either elementary (23.0%) or secondary (51.9%) schooling as their maximum education level. The ratio of males to females was exactly equal, and the percentage of urban residents (49.5%) was only slightly exceeded by the number of rural residents (50.5%).

The profile of Saskatchewan residents matches that of the Canadian population quite closely, with a few exceptions. The greatest divergence occurs in the percentage of rural and urban residents. Canada-wide, 70.5% of the population were classified as urban residents in 1981, compared to 49.5% in Saskatchewan. Minor differences occurred in that Saskatchewan has a larger number of residents 65 years of age or older (15.6%) compared to 12.2% nationally. As well, Saskatchewan has a lower percentage of university graduates (6.2%) compared to 9.2% throughout the country.

The purpose in presenting this profile of the Saskatchewan population is to enable the reader to distinguish between wildlife-related activities that appeal to a representative cross-section of the Saskatchewan population from those that appeal to participants whose profile may be quite different with regard to age, sex, residence or educational composition. For example, while men constituted 50.0% of the Saskatchewan population, they comprised 91.7% of those who hunted in 1981. Thus it can be said that hunting was more popular among Saskatchewan males than females, or that males were disproportionately involved in hunting. In other words, there were more men hunting than one would expect if participation in hunting were to follow the actual concentration of males in the Saskatchewan population.

2.0 Participation in Wildlife-Related Activities

In 1981, a great many Saskatchewan residents participated in a wide range of wildlife-related activities. An estimated 617,000 Saskatchewan people (85.6% of the surveyed population) participated in indirect wildlife-related activities; 462,000 (64.2%) participated in residential wildlife-related activities; 120,000 (16.7%) took a special primary non-consumptive trip to encounter wildlife; 325,000 (45.2%) encountered wildlife incidentally during other trips or outings; and 107,000 (14.8%) Saskatchewanians hunted wildlife in 1981.

These figures are similar to the national survey results, although a smaller percentage of Canadians (9.8%) than Saskatchewanians (14.8%) hunted in 1981.

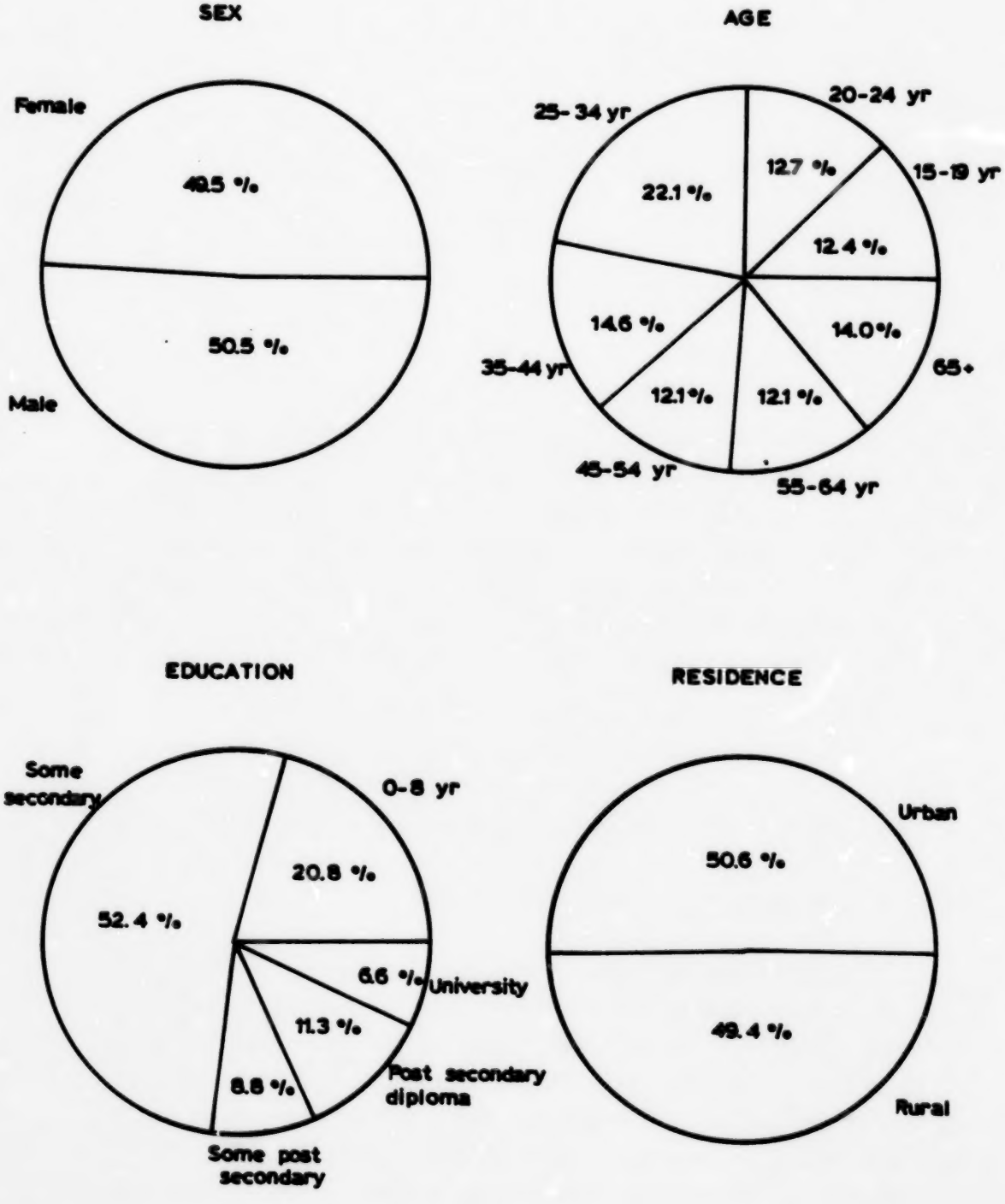
2.1 Indirect Wildlife-Related Activities

In 1981, 85.6% of the surveyed population, or 617,000 Saskatchewan residents, participated in some form of indirect wildlife-related activity. Watching films or television programs on wildlife was the most common form of indirect wildlife-related activity, attracting 576,000 people or 80.0%. Second in popularity was reading about wildlife, reported by 52.3% of the Saskatchewan population, followed by visiting a zoo, aquarium, or museum of natural history, which attracted 289,000 people (40.1%). The purchase of art, crafts and posters of wildlife was reported by 98,000 (13.6%) Saskatchewan residents. Sixty-eight thousand people, or 10.0%, reported participation in a wildlife organization.

By referring to Appendix A, dealing with the characteristics of the Saskatchewan population, and comparing the results with those of indirect users in Figure 2.10, the reader will note that the profile of both groups is very similar.

The profile of participants in wildlife organizations does depart quite notably from that of the Saskatchewan population, however.

Figure 2.10. Profile of Saskatchewan Residents Participating in Indirect Wildlife-Related Activities in 1981.



Membership in wildlife organizations was substantially more popular with males (73.4%) and those between 25 and 44 years of age (46.0%). Rural residents (58.0%) were also disproportionately represented in wildlife organizations as were graduates of post secondary schooling or university (22.8%).

2.2 Non-Consumptive Residential Wildlife-Related Activities

Non-consumptive activities around the residence or cottage were defined as activities that include feeding, watching, photographing or studying wildlife and maintaining plants or shrubs to provide food or shelter for wildlife. In 1981, about 462,000 Saskatchewan residents (64.2%) participated in one or more of these activities.

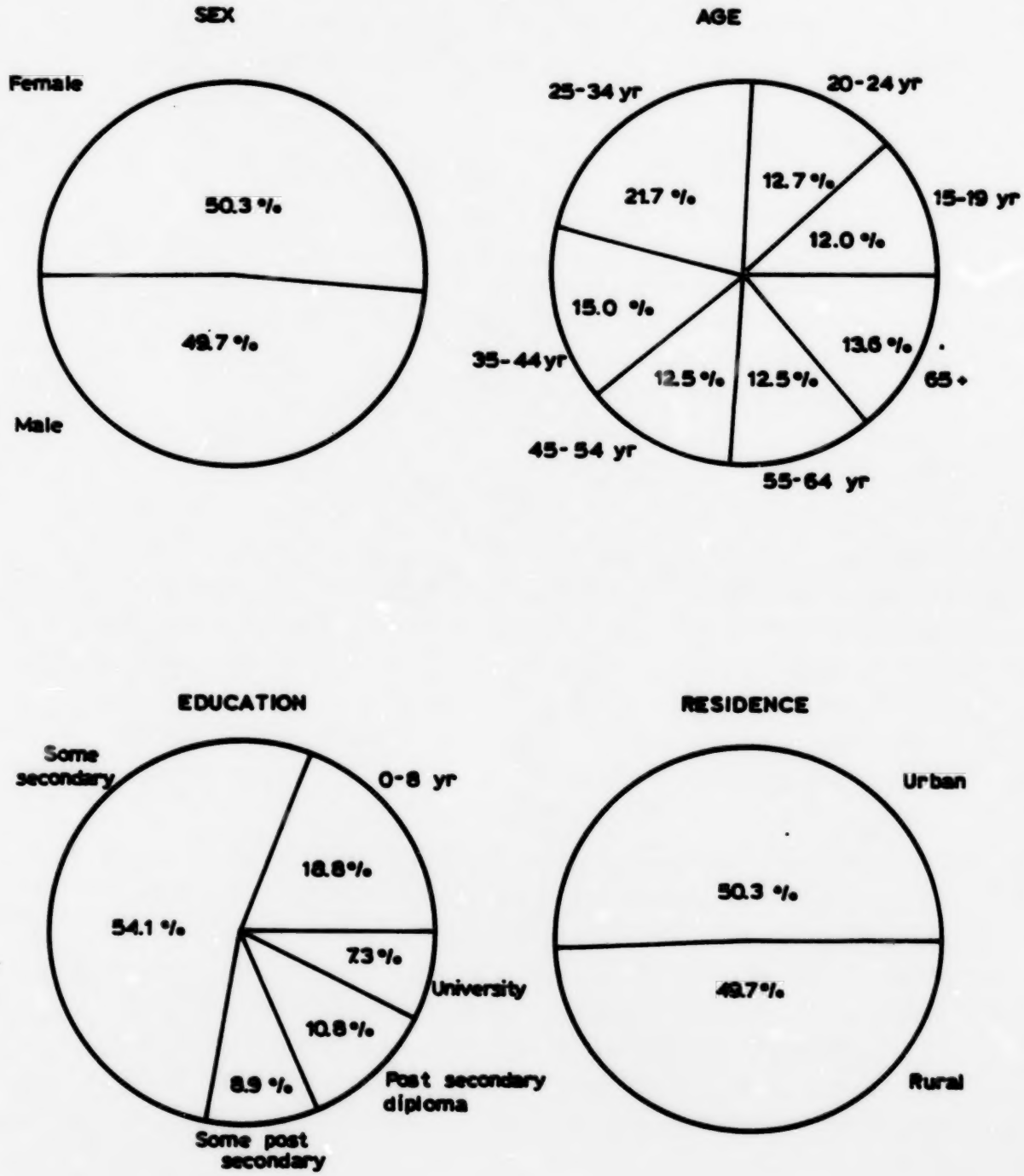
Watching and feeding wildlife were the most popular of the non-consumptive residential activities, with an estimated 390,000 (54.2%) and 267,000 (37.1%) people, respectively, reporting participation in 1981. Studying wildlife was undertaken by 128,000 Saskatchewan residents (17.8%) and was the third most popular activity. Photographing wildlife and maintaining plants for wildlife were equally popular, with a participation rate of 16.0%, while 13.6% purchased feed for wildlife.

Participation in non-consumptive residential wildlife-related activities did not differ appreciably from the profile of the Saskatchewan population shown in Appendix A (see Figure 2.20).

2.3 Non-Consumptive Wildlife-Related Trips

Saskatchewan residents frequently encounter wildlife outside the residential setting. However, the forms of these encounters may vary substantially. To distinguish between them, two types of wildlife encounters were defined. The first type, and the most common, occurs during a trip or outing taken for business or pleasure that has a primary purpose other than to encounter wildlife. This form is referred to as incidental wildlife encounters during other outings

Figure 2.20. Profile of Participants in Non-Consumptive Residential Wildlife-Related Activities in 1981.



or trips. Wildlife encounters during a special trip or outing when the main purpose is to observe, photograph, or study wildlife are referred to as primary non-consumptive wildlife-related trips. These two distinct forms of wildlife encounters were addressed separately.

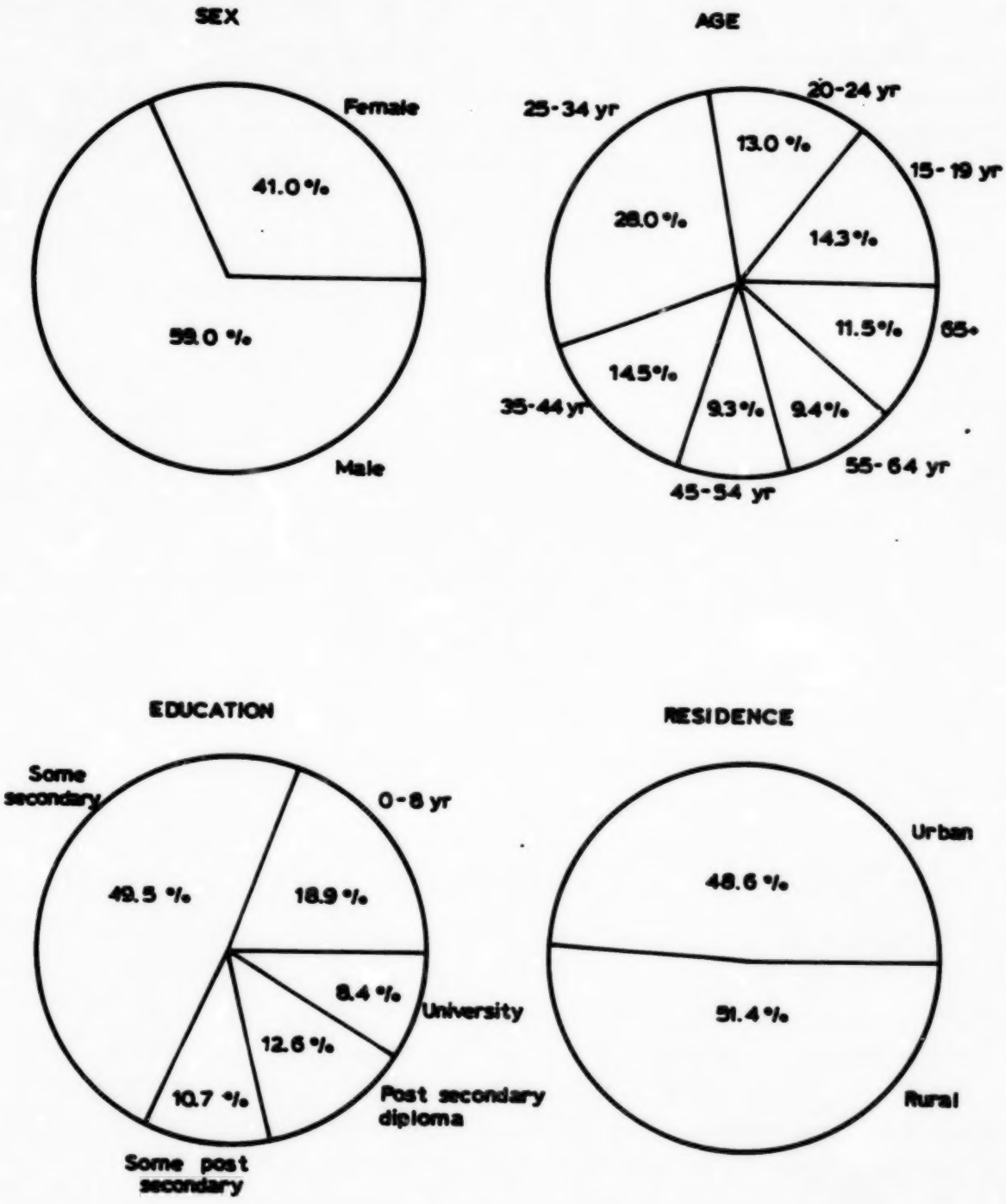
Primary Non-Consumptive Wildlife-Related Trips

Primary non-consumptive wildlife-related trips were taken by about 120,000 persons (16.7% of the Saskatchewan population). During these trips, watching wildlife was the most common activity, engaged in by 97,000 people (13.5%). Photographing and studying wildlife were almost equally popular activities in which 36,000 (5.0%) and 33,000 people (4.6%), respectively, took part. Approximately 26,000 Saskatchewan residents (3.6%) fed wildlife during a primary non-consumptive trip or outing.

Saskatchewan residents taking part in primary non-consumptive trips reported watching, feeding or studying various types of wildlife during their trips. On such trips, 82,000 people (11.4%) reported seeing waterfowl such as ducks, geese, herons and cranes. Other birds such as pigeons, hawks, owls and songbirds were spotted by 80,400 people, and 81,000 reported seeing small mammals. Large mammals and other wildlife were encountered less frequently; about 69,200 (9.6%) Saskatchewan people reported encounters with large mammals and 35,200 (4.9%) sighted other forms of wildlife.

Participants came from a cross-section of Saskatchewan society, yet differed in several aspects. Figure 2.30 reveals that primary non-consumptive trips were more popular among males. Participants between 15 and 44 years of age were also disproportionately represented, especially those between 25 and 34 years of age who comprised 28.0% of trip takers. Slightly more participants were rural residents. As well, participants with an education beyond secondary school (31.7%) were disproportionately engaged in this activity.

Figure 2.30. Profile of Saskatchewan Residents Participating in Primary Non-Consumptive Wildlife-Related Activities in 1981.



Incidental Wildlife Encounters During Other Outings or Trips

In 1981, an estimated 325,000 persons (45.2% of the Saskatchewan population) encountered wildlife incidently while on outings or trips taken for business or pleasure. Saskatchewan residents who encountered wildlife during these other trips or outings took part in a number of activities related to wildlife. An estimated 303,000 people (42.1%) watched wildlife, 101,000 (14.0%) fed wildlife, 52,000 (7.2%) photographed wildlife and 16,000 (2.2%) studied the wildlife they encountered.

During these incidental encounters, Saskatchewan people observed, photographed, fed or studied a variety of wildlife. Some 201,000 persons (27.9%) reported seeing waterfowl, including ducks, geese, herons and cranes, and 200,000 (27.8%) reported sighting other birds, such as hawks, robins and sparrows. Small mammals such as rabbits, squirrels, raccoons and foxes were seen by 172,000 Saskatchewan residents (23.9%) and large mammals such as bears, moose and deer were sighted by 91,000 people (12.6%).

Slightly more males than females encountered wildlife on other trips or outings (see Figure 2.31), and Saskatchewan residents between 15 and 44 years of age were disproportionately engaged in this activity. Those with an education beyond secondary schooling were also disproportionately represented, comprising 32.6% of those who encountered wildlife incidently in 1981.

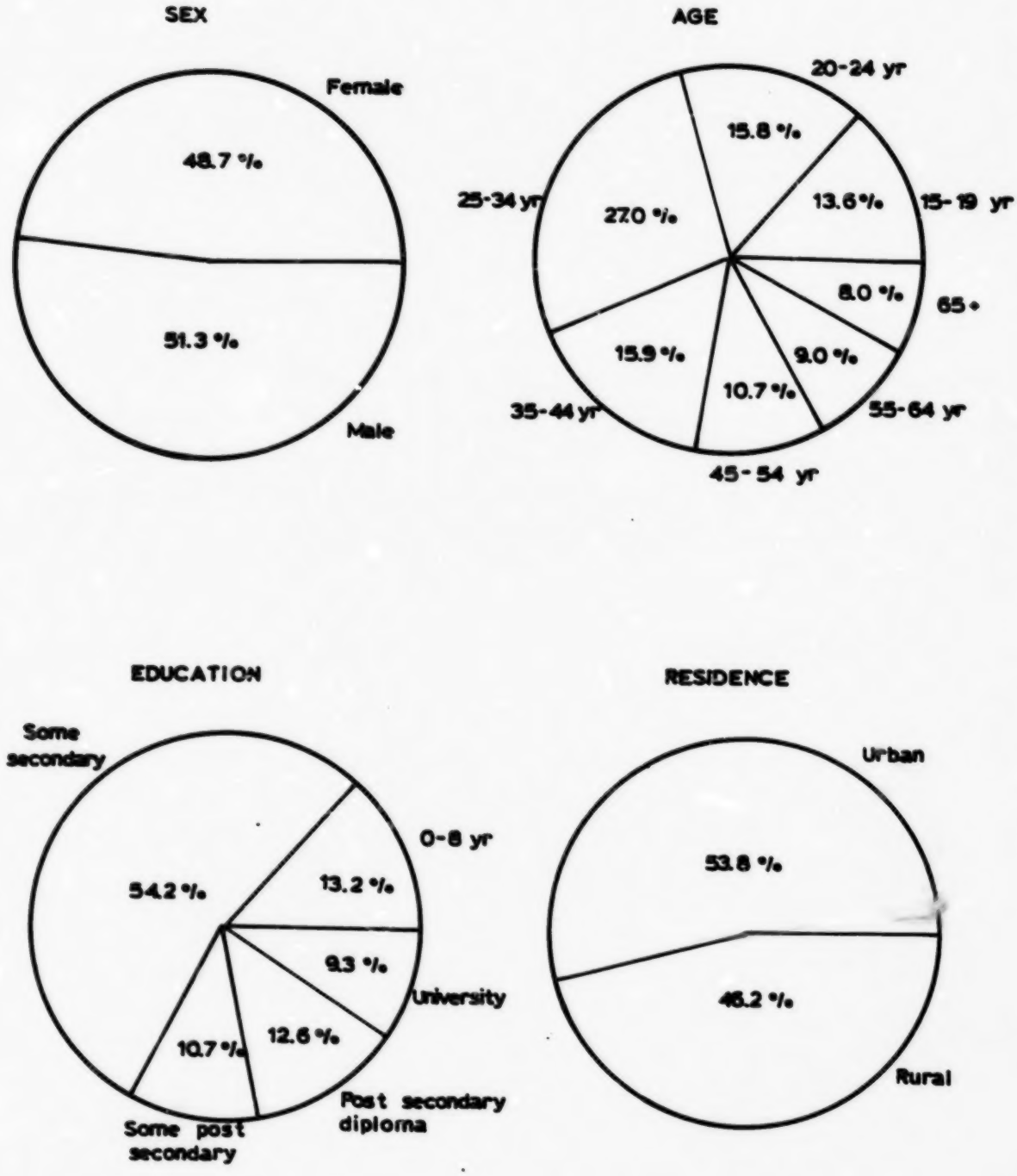
2.4 Consumptive Wildlife-Related Activity - Hunting

Hunting in 1981

About 107,000 persons (14.8% of the Saskatchewan population) hunted in 1981. Approximately 7.3% of Saskatchewan residents 15 years of age and over hunted waterfowl, 6.4% other birds, 6.0% small mammals and 9.4% large mammals. The figures show that more Saskatchewan people hunt large mammals, compared to 5.1% of the Canadian population.

Hunters differ from the profile of the Saskatchewan population

Figure 2.31. Profile of Saskatchewan Residents Who Encountered Wildlife Incidentally While on Other Trips or Outings.



in several ways. Those who hunted in 1981 were highly concentrated among males (91.7%) and rural residents (59.5%). Hunters between 15 and 44 years of age composed 81.0% of those who hunted in 1981, revealing that hunting is much more popular among the younger segment of the population. Although people 45 years of age and older comprised 40.6% of the Saskatchewan population, only 19.0% of these were hunters in 1981. The majority of hunters active in 1981 (79.7%) had secondary or elementary schooling only.

The profile of hunters changed somewhat depending on the target species as shown in Table 2.40. Men overwhelmingly comprised the majority of hunters, but those women who did hunt were most inclined to hunt small mammals, and secondly, large mammals. Younger hunters, those 24 years of age or younger, were also most likely to hunt small mammals. Large mammals were most frequently the target of hunters in the three middle age groups, those aged 25 to 54 years. Urban dwellers more frequently hunted waterfowl and other birds, rather than mammals. Those with some secondary education were also disproportionately involved in hunting.

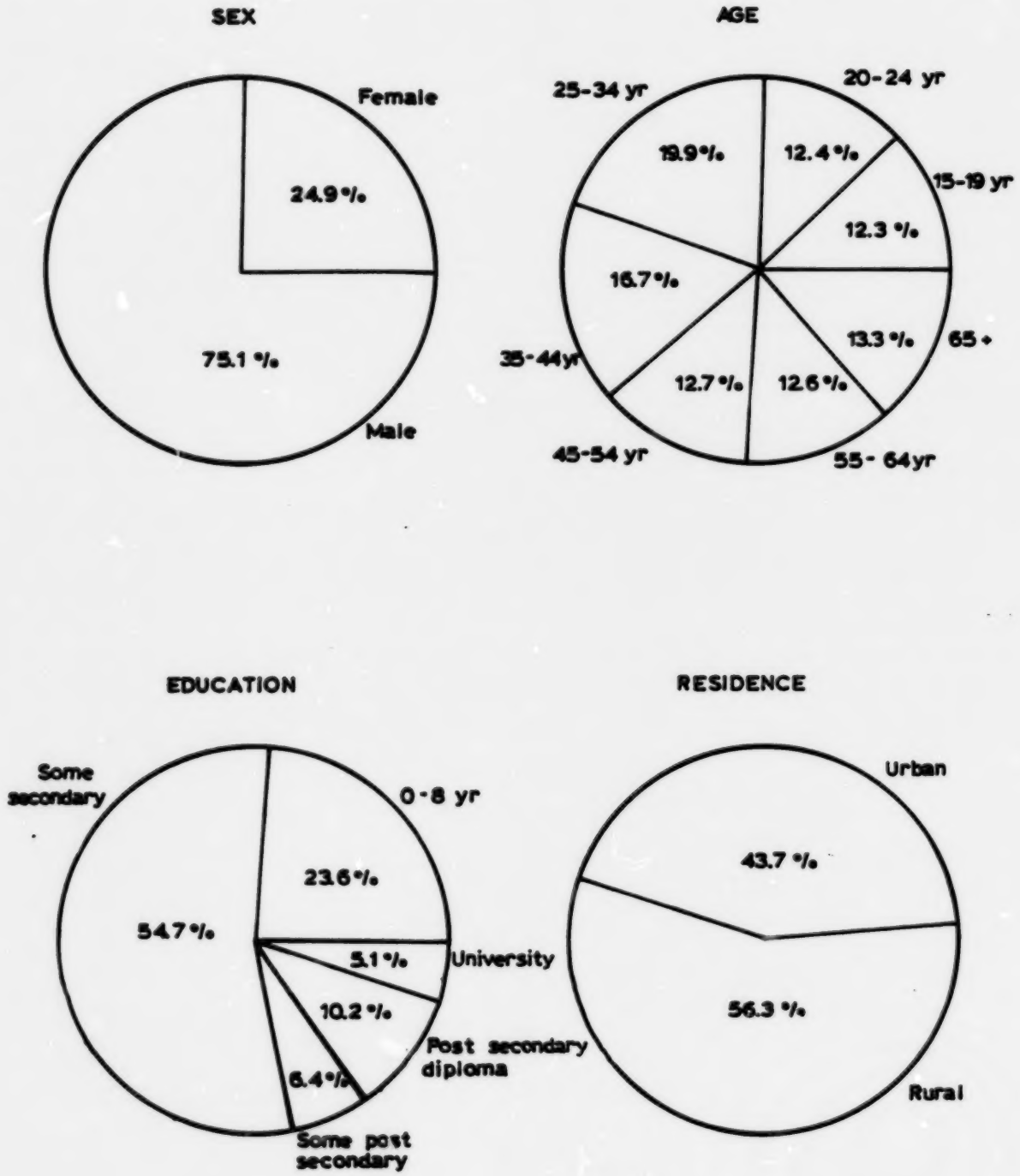
Previous Involvement in Hunting

In 1981, about 253,000 persons (35.1% of the Saskatchewan population) reported having had some hunting experience at some time during their lives. Although the profile of these past or intermittent participants differs substantially in some aspects from that of the Saskatchewan population as a whole, overall, it is more similar to the Saskatchewan profile than that of the 1981 hunters (see Figure 2.40). Similar to the 1981 hunters, those between the ages of 25 and 35 comprised the largest age group (19.9%) of those who had ever hunted, and a slightly disproportionate number were from rural areas (56.3%). However, women composed a substantially larger proportion (25.0%) of those who had ever hunted, compared to just 8.3% of the 1981 active hunters.

Table 2.40. Profiles of Saskatchewan Hunters Who Hunted Various Types of Wildlife in 1981.

	Hunted	Hunted Waterfowl	Hunted Other Birds	Hunted Small Mammals	Hunted Large Mammals
Both Sexes	106,648	52,242	46,290	43,138	67,388
% of Total Population	14.8%	7.3%	6.4%	6.0%	9.4%
Age					
15-19	20.8%	23.8%	26.7%	34.2%	12.5%
20-24	15.5%	17.2%	17.9%	20.4%	15.6%
25-34	24.6%	20.6%	23.8%	20.8%	29.6%
35-44	20.1%	20.6%	19.2%	12.9%	21.6%
45-54	8.9%	7.7%	5.1%	3.7%	10.7%
55-64	6.5%	6.8%	4.5%	4.8%	7.6%
65+	3.6%	3.3%	2.8%	3.2%	2.5%
	100.0	100.0	100.0	100.0	100.0
Residence					
Rural	59.5%	55.6%	56.1%	64.3%	63.0%
Urban	40.5%	44.4%	43.9%	35.7%	37.0%
	100.0	100.0	100.0	100.0	100.0
Education Level					
0-8	19.4%	19.1%	16.4%	17.7%	19.9%
Some Secondary	60.3%	62.9%	62.3%	63.3%	60.6%
Some Post Secondary	6.7%	5.0%	6.1%	6.9%	5.7%
Post-Secondary Cert.	9.0%	7.4%	9.9%	8.2%	9.8%
University	4.7%	5.6%	5.3%	3.9%	4.0%
	100.0	100.0	100.0	100.0	100.0

Figure 2.40. Profile of Saskatchewan Residents Who in 1981, Had Hunted at Least Once.



3.0 Time Spent Participating in Wildlife-Related Activities

The amount of time engaged in any activity provides some measure of the extent of involvement in that activity. This information, along with the expenditures related to the activity, allows differentiation between simple involvement and a commitment to the activity.

Data outlining the total and average number of days engaged in different wildlife activities are presented as well as a profile by age. A day in this study referred to any part of a day engaged in an activity.

Table 3.00 presents an overview of the total and average number of days on which Saskatchewan residents took part in wildlife-related activities. Saskatchewan people were involved most in residential wildlife-related activities, followed by incidental encounters during a business or pleasure trip or outing, primary non-consumptive trips, and hunting.

3.1 Residential Wildlife-Related Activities

In 1981, Saskatchewan residents spent approximately 25.4 million days engaged in residential wildlife-related activities around their residence or cottage, an average of 54.9 days per participant (see Table 3.00).

The average number of days (see Table 3.10) on which different age groups engaged in residential wildlife activities showed a great deal of variation. Younger participants tended to spend fewer days than others engaged in these activities, with those 15-24 years of age averaging 33 days. Participants in older age groups show a tendency to devote increasing amounts of time to these activities, with those over 65 years of age averaging 94.3 days per year.

Table 3.00. Total and Average Number of Days on Which Participants Engaged in Wildlife-Related Activities in 1981.

Wildlife-Related Activity	Total Days in Millions For All Participants	Average Number of Days Per Participant
Residential	25.4	54.9
Incidental Encounters on Other Trips	5.7	17.6
Primary Non-Consumptive Trips	1.9	15.9
All Game Hunting	1.7	16.1

Table 3.10. Average No. of Days on Which Participants Engaged in Various Wildlife-Related Activities in 1981 by Age Group.

Wildlife Related Activity	Age Group 15-19	20-24	25-34	35-44	45-54	55-64	65+	Overall Average
Residential Activities	36.1	30.5	42.3	53.0	70.9	79.2	94.3	54.9
Primary Non-Consumptive Trips	14.8	15.6	12.2	20.7	19.2	16.7	20.8	15.9
Incidental Encounters With Wildlife on Other Trips	13.4	16.5	16.5	16.9	23.0	24.4	17.1	21.5
Hunting:								
All Wildlife	18.2	18.8	14.2	12.7	10.5	30.1	16.9	16.1
Waterfowl	11.2	10.2	8.4	7.3	6.2	9.0	12.7	9.1
Other Birds	8.2	10.0	7.2	5.2	5.1	6.7	13.2	7.6
Small Mammals	13.7	13.3	13.6	9.2	8.9	9.1	19.0	12.9
Large Mammals	8.4	7.7	7.9	7.7	8.5	7.3	8.6	7.9

3.2 Primary Non-Consumptive Wildlife-Related Trips

Saskatchewan residents spent an estimated 1.9 million days engaged in primary non-consumptive trips in 1981, with each participant averaging 15.9 days.

Saskatchewan people aged 35 and older showed a tendency to spend slightly more time on primary non-consumptive trips, as illustrated in Table 3.10.

3.3 Incidental Encounters With Wildlife During Other Trips or Outings

About 5.7 million days were spent by Saskatchewan residents in 1981 on trips during which incidental wildlife encounters occurred, for an average of 17.6 days per participant (see Table 3.00).

Rural residents, spending an average of 21.5 days on trips or outings where incidental wildlife encounters occurred, showed a higher involvement in this type of activity than urban residents, for whom the average was 14.4 days. Also, as shown in Table 3.10, the average number of days spent on this type of trip or outing tends to increase with age until the age of 65.

3.4 Hunting

In 1981, Saskatchewan residents spent an estimated 1.7 million days hunting. The average amount of time spent on specific categories of game varied between 7.6 to 12.9 days. The average time engaged in hunting for all game categories, however, was substantially higher at 16.1 days. An examination of the total days hunting indicated that people hunted more than one type of wildlife during a hunting trip: the sum of the reported hunting days for each wildlife type was considerably larger (1.9 million) than the total number of days spent hunting (1.7 million). Saskatchewan residents in total hunted waterfowl 475,000 days, other birds 352,000 days, small mammals 557,000 days, and large mammals 532,000 days.

The hunter recreation days reported by respondents in the national wildlife survey vastly exceed the number reported on the Hunter Survey Questionnaires that were mailed out by the Wildlife Branch, Sask. Parks and Renewable Resources (Sask. Parks and Renewable Resources, 1981) for the same year. The provincial survey determined that waterfowl hunters, in 1981, spent 98,100 days in the field, upland bird hunters 68,988 days, and big game or large mammal hunters spent 270,880 days hunting. Comparable small mammal figures were not calculated.

Several factors may account, at least partially, for the discrepancies. The most obvious factor, which may account for a substantial amount of the differences, was in the way each survey defined a day. The national survey, considered any portion of a day hunted as one full recreation day, whereas the provincial survey counted 4 hours or less as a half day, or more than 4 hours as a full day.

Secondly, participation rates and the recreation days reported in a survey that canvasses the general population are consistently higher than when known hunters only are interviewed (Filion, pers. comm.). The reason for this phenomenon is unknown.

As well, the national survey was carried out between February and May of 1981, and asked people to recall their hunting activities from the previous fall. The provincial survey sent out the questionnaires in early fall, so that hunters could record their hunting activities day by day. The fact that one survey required respondents to recall their activities after several months had elapsed could alter the results somewhat.

Finally, different methods of administration of questionnaires resulted in very different response rates. The national survey, which made personal contact, was able to achieve a response rate of 77%, while the provincial mail-out survey had a response rate of just 27%. A high rate of non-response can bias the results of a survey. A study carried out by Canadian Wildlife Service regarding non-response by waterfowl hunters determined that late responding and non-responding active waterfowl hunters tended to have less previous experience and

hunted more days. Late responding and non-responding successful waterfowl hunters tended to have a lower mean kill and a lower mean kill per day (Filion, 1976). The provincial survey, therefore, may have been biased to show fewer hunting days, and a lower average number of days per kill.

These factors, perhaps along with others, have produced results which cannot be compared. The purpose of presenting this information is simply to document that the discrepancies exist, and should be kept in mind when applying the numbers for management purposes.

As indicated in Table 3.10, those from the three youngest age groups and the two oldest age groups tend to hunt more days on average than those aged 25 to 54 years. Compared to the average Canadian hunter, Saskatchewan hunters in the 35 to 54 year age group spend less days hunting on average. During 1981 in Saskatchewan, hunters in the 35-44 year age group spent an average of 12.7 days hunting, while those in the 45-54 year age group hunted an average of 10.5 days. These figures contrast somewhat with the national results that showed that 35 to 44 year old hunters spent an average of 15.6 days hunting and 45 to 54 year olds spent an average of 14.5 days hunting throughout the year. In the 55 to 64 year old age group, however, Saskatchewan hunters spent an average of 30.1 days hunting in 1981, which substantially exceeds the 16.2 day average reported by Canadian hunters in that age group.

4.0 Expenditures on Wildlife-Related Activities

In this section the total and average expenditures by the participants in a number of wildlife-related activities are examined. Expenditures are broken down into five areas, equipment, transportation, food, accommodation and other purchases, and a percentage analysis of expenditures on certain wildlife-related activities is presented.

In 1981, Saskatchewan residents spent about $172.6 million (see Table 4.00) on various wildlife-related activities. Primary non-consumptive wildlife trips accounted for 49.8% of expenditures. Hunting claimed 31.5% and other wildlife-related activities accounted for 18.7% of expenditures.

4.1 Expenditures on Primary Non-Consumptive Wildlife-Related Trips

Saskatchewan people spent about $86.0 million (see Table 4.00) on primary non-consumptive wildlife-related trips in 1981. Approximately 120,000 people took such trips and spent an average of $715 a year or about $45 per trip day. These expenditures exceeded the national averages, which were $589 per participant a year, or about $37 per day.

In 1981, about 64.9% of the $86.0 million spent on primary non-consumptive wildlife-related trips was used to purchase equipment. The rest was split between transportation (18.9%), food (8.1%), accommodation (4.5%), and other purchases (3.7%). Saskatchewan residents used a larger percentage of their total expenditure to purchase equipment, compared to all Canadians, who spent 52.7% of their expenditure on equipment.

4.2 Expenditures on Hunting Wildlife

In 1981, Saskatchewan residents who hunted spent about $54.3 million hunting wildlife, or $508 per hunter (see Table 4.00). Waterfowl hunting accounted for $12.0 million or $229 per hunter; other

Table 4.00. Total and Average Expenditures by Saskatchewan Participants on Wildlife-Related Activities in 1981.

Wildlife Related Activity	Average Yearly Expenditure Per Participant	Total Expenditures in Millions By All Participants	% of Total Expenditures
Primary Non-Consumptive Trips	$715	$86.0	49.8%
All Game Hunting	508	54.3	31.5%
Maintaining Natural Areas	299	16.4	9.5%
Wildlife Organizations	109	7.9	4.6%
Residential Activities	12	5.4	3.1%
Incidental Encounters on Other Trips/Outings	8	2.6	1.5%
Totals	-	$172.6	100.0%

bird hunting $5.8 million or $124 per hunter; small mammal hunting $10.3 million or $240 per hunter; and large mammal hunting $26.2 million, or $389 per hunter. With the exception of small mammal hunting, average expenditures per Saskatchewan hunter were somewhat less than the national average.

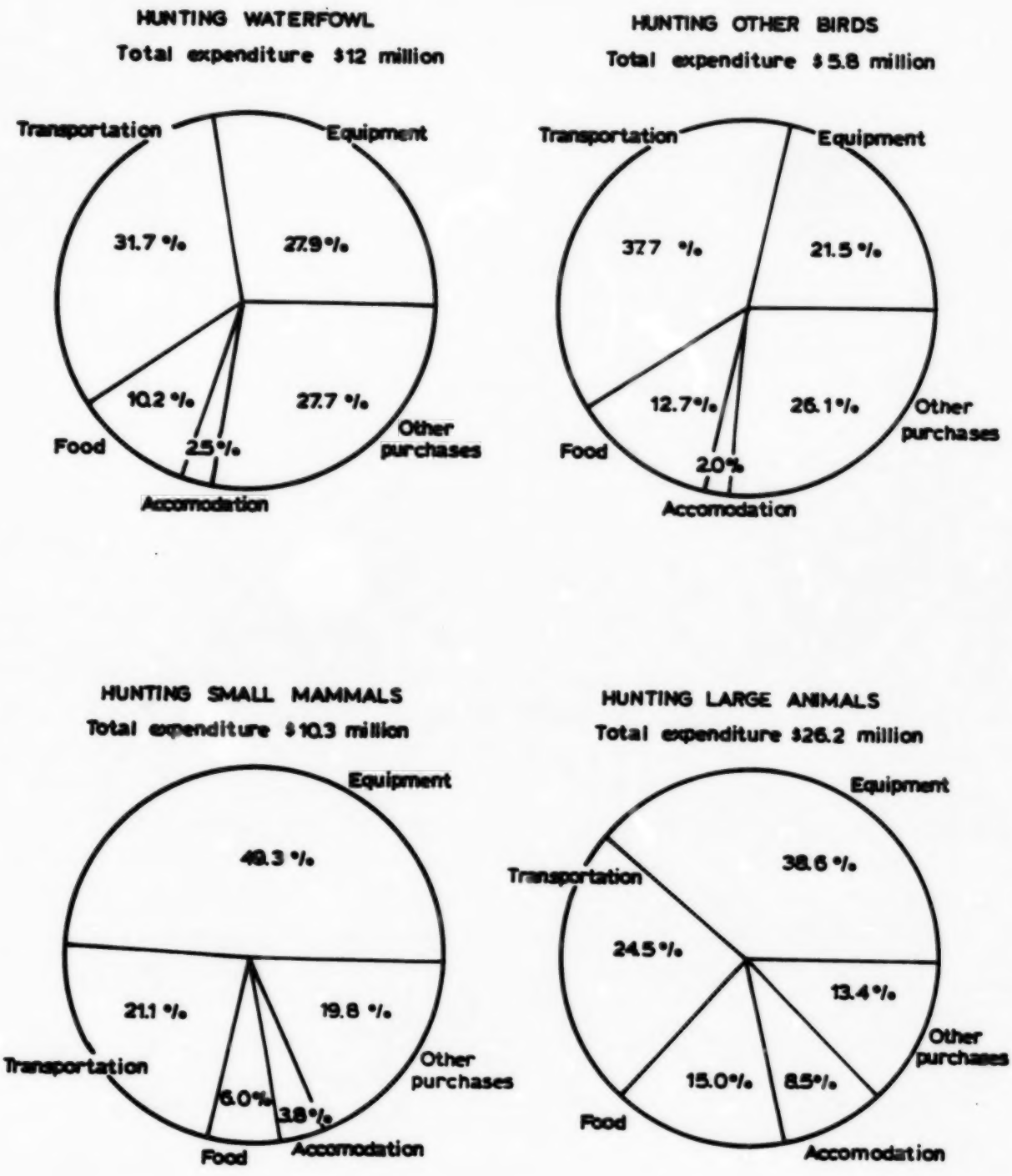
The average expenditure per day per participant hunting wildlife was $32. Hunters of large mammals reported the largest daily expenditure at $49, waterfowl hunters spent $25, small mammal hunters spent $19, and those hunting birds other than waterfowl reported the lowest daily expenditure at $16.

Equipment purchase constituted the largest expenditure, accounting for 36.5% of total expenditure. Transportation accounted for 26.8% of total expenditure, food for 12.0%, accommodations 5.6%, and other purchases for 19.1%. The distribution of expenditures varied somewhat depending on the type of wildlife hunted, as shown in Figure 4.20.

4.3 Expenditures on Other Wildlife-Related Activities

Expenditures on other wildlife-related activities accounted for 18.7% of the $172.6 million spent on wildlife during 1981. The largest amount in this category (see Table 4.00), accounting for 9.5% of the total or $16.4 million, was spent by about 55,000 Saskatchewan residents on maintaining natural areas for wildlife. Residential wildlife-related activity, while having a low yearly expenditure per participant of $12, accounted for $5.4 million, or 3.1% of total wildlife-related expenditures. Contributions to wildlife organizations and expenditures on other trips or outings accounted for the remaining 6.1% of total wildlife-related expenditures. About $7.9 million, an average of $109 per participant, were spent on wildlife organizations in the form of donations or membership fees. A further $2.6 million were spent by Saskatchewan people who encountered wildlife incidentally while on an outing or trip, with each participant spending on average $8 per year.

Figure 4.20. Percentage Distribution of Money Spent on Hunting Waterfowl, Other Birds, Small Mammals and Large Mammals in 1981.



5.0 The Recreational Economic Significance of Wildlife in Saskatchewan

The purpose of this section of the report is to: 1) put a dollar value on the benefits received by the people who participate in wildlife-related recreational activities, and 2) describe the economic impacts that result from the expenditures by those participants.

5.1 Determining the Economic Significance of Wildlife in Saskatchewan

Wildlife-related recreational activities generate two types of economic benefits: 1) direct benefits which are received by those who participate in wildlife-related activities, and 2) indirect benefits resulting from the impacts of the expenditures on the Saskatchewan economy.

Direct Benefits

Direct benefits are concerned with the enjoyment or satisfaction received directly by participants in wildlife-related activities.

The dollar value is derived from quantifying first the actual costs that participants incur in order to enjoy wildlife-related activities. Secondly, the additional money consumers would be willing to pay (or the "consumer surplus") for that type of recreation is ascertained. The sum of these two figures is used to evaluate the "Direct Benefits" provided to participants in wildlife-related activities.

To evaluate the direct benefits, respondents to the Statistics Canada survey were questioned on their actual costs and then asked what additional amount of money they would have been prepared to pay. In other words, how much more would the participants be prepared to pay before they would stop doing the wildlife-related recreational activities because it was more costly than it was worth. The summation of those responses represents the direct benefits accruing annually to all participants from recreational utilization of wildlife resources.

Indirect Benefits

Indirect benefits consist of impacts on the economy that occur as a result of the money spent on wildlife-related activities by participants. The total impact on the provincial economy from these expenditures may be quite substantial and is reflected in economic indicators that show indirect benefits in terms of increased personal income, employment and government revenue, among others.

Measuring the economic impacts of wildlife-related recreational activities on the national and provincial economies was done by first obtaining data from participants through Statistics Canada on the expenses they incurred for wildlife-related activities. These data were then processed using the latest econometric models to determine their impacts.

The questionnaire used in the national survey was designed so that annual expenditures would only be registered if they were incurred PRIMARILY for wildlife-related activities. The expenditure-related questions covered seven kinds of costs: expenditures on accommodations, transportation, food, equipment and other items, maintenance and improvement of natural areas for wildlife, and memberships in and donations to wildlife-related organizations.

The effects of the expenditures on the main industries and at various stages of production and distribution of goods and services were computed using the Input-Output models available from Statistics Canada for both provincial and national economies. In the process, data from the seven expenditure categories were allocated to 46 appropriate industries.

The analysis revealed that wildlife-related expenditures contribute significantly to Canada's Gross Business Production, Gross Domestic Product, employment, personal income, and government revenue. The effect on these factors for the province of Saskatchewan are outlined in Section 5.2. Many of these economic impacts are thought to be net impacts, to the extent that a significant portion of the spending might not have occurred in the absence of healthy and abundant wildlife populations.

5.2 Economic Results for Saskatchewan

The results that follow depict the economic significance of recreational wildlife utilization for Saskatchewan residents, grouped according to type of economic benefit.

Direct Benefits

Figure 5.20 shows the amounts of money spent by Saskatchewan residents who participated in wildlife-related recreational activities and the direct benefits they received. Direct benefits received by those involved in hunting and non-hunting amount to $43 million. Total direct benefits were distributed 65% to hunters and 35% to non-hunters. On a per capita basis, those who hunted received direct benefits averaging $262 while those involved in primary non-consumptive trips averaged $125. These benefits are judged to be conservative given the absence of similar findings for "other wildlife activities", which include residential, indirect and incidental participation.

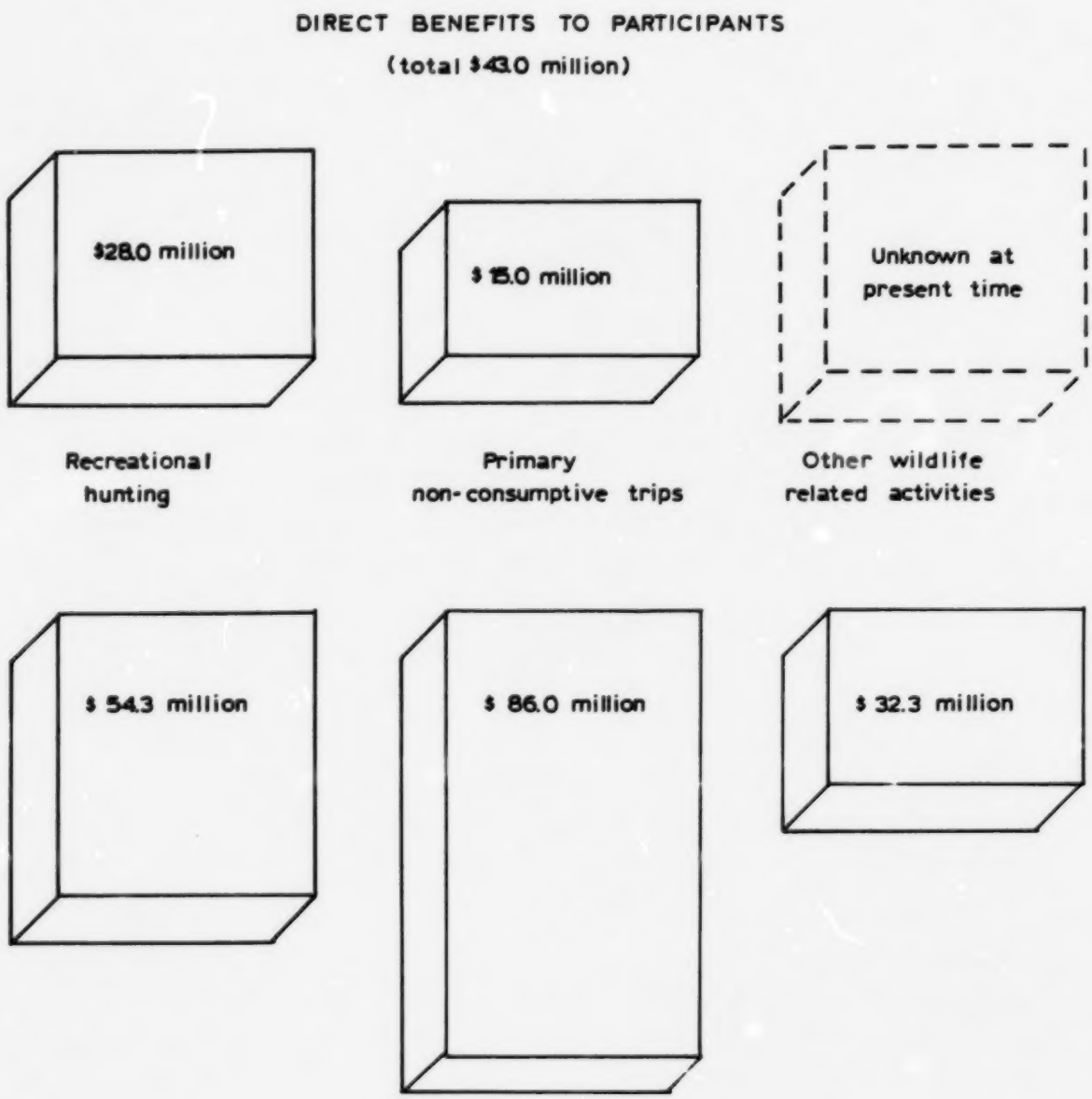
The figure also shows that expenditures of participants in wildlife-related recreational activities amounted to $172.6 million. Total expenditures on hunting, residential wildlife activities, and incidental wildlife encounters during trips are almost equivalent to expenditures on primary non-consumptive trips. On a per capita basis the average expenditures were highest for those who took primary, non-consumptive trips ($715) followed by hunters ($508).

The sum of direct benefits and expenditures reveals that participants are willing to pay $216 million annually for the enjoyment provided by wildlife-related activities.

Capitalized Direct Benefits

Effective wildlife and environmental management can be expected to ensure the perpetuation of wildlife populations and to allow a sustained yield of direct benefits accruing to the Saskatchewan public.

Figure 5.20. Expenditures and Direct Benefits Reported by Saskatchewan Residents Participating in Wildlife-Related Recreational Activities in 1981.



It is possible to quantify the magnitude of this sustained yield of direct benefits in perpetuity by "capitalizing" the economic benefits observed in 1981. The results of the computation are shown in Figure 5.21. The left portion of the figure reproduces the annual economic benefits reported in Figure 5.20 for 1981. For capitalization purposes these benefits, valued at $43 million, are assumed to be typical of the benefits enjoyed by Saskatchewanians in any typical year after 1981.

The right side of Figure 5.21 shows the amount of capital in 1981 dollars that would be required to yield an annual $43 million in benefits in perpetuity. This is equivalent to computing what amount of cash would be invested at a fixed interest rate to provide an annual return in interest of $43 million. The capitalized value of these annual benefits is estimated at $427 million. This value is based on an interest or "discount" rate of 10%, which is consistent with the Government of Canada Treasury Board Secretariat (1983). These capitalized values provide an estimate of the direct benefits that would be lost if wildlife-related recreational activities were allowed to disappear.

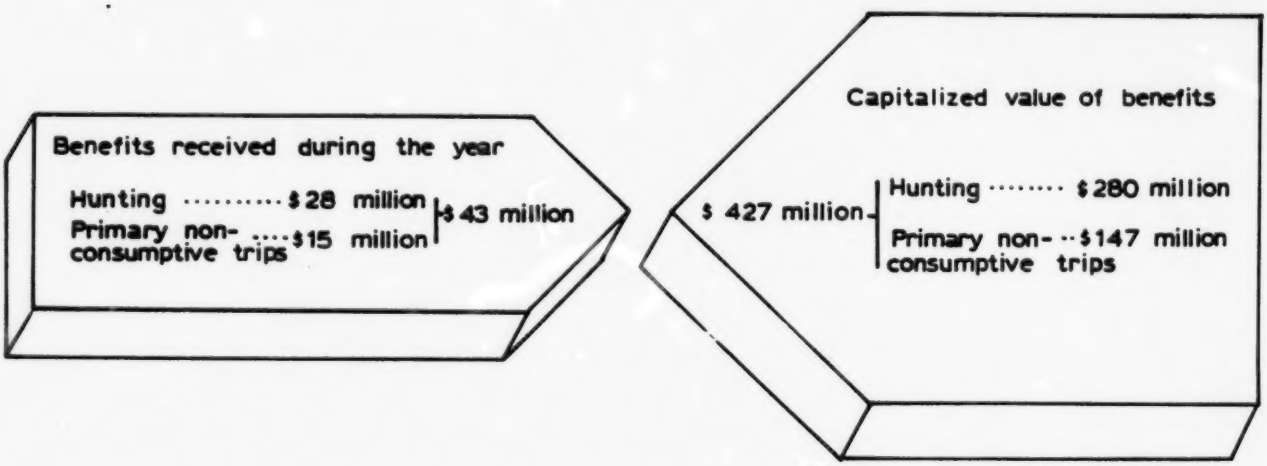
Indirect Benefits

The $172.6 million in expenditures from Saskatchewan participants in wildlife-related recreational activities reported in Figure 5.20 is the basis for assessing indirect benefits to the economy. These expenditures are broken down in the left portion of Figure 5.21. They represent a broad range of goods and services which permeate various sectors of the Saskatchewan economy. Accommodations, transportation and food constitute the main variable costs, which increase with the amount of participation and account for 30% of all money spent in pursuit of wildlife-related activities. Equipment purchased primarily to participate in wildlife-related activities represents 44% of total expenditures and constitutes the largest single category.

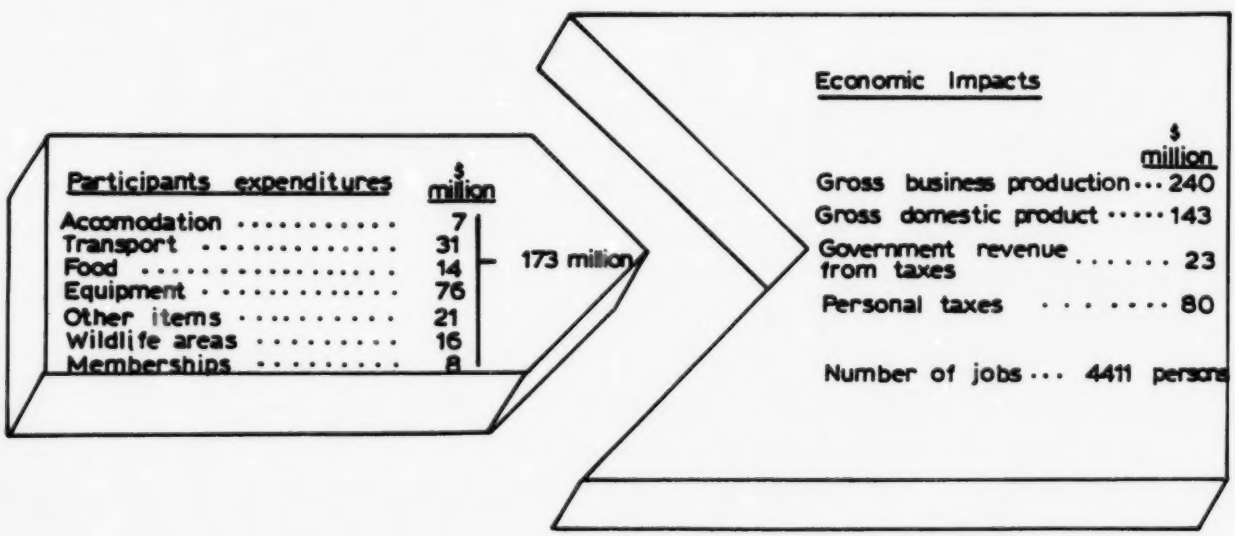
The economic indicators shown on the right of Figure 5.21 reveal the magnitude of the economic impacts on the provincial economy in 1981, including direct, indirect and induced economic effects.

Figure 5.21. Economic Benefits of Wildlife-Related Recreational Activities by Saskatchewan Residents in 1981.

DIRECT BENEFITS RECEIVED BY PARTICIPANTS


Benefits received during the year
Hunting ..... $28 million
Primary non-consumptive trips .... $15 million
$43 million
Capitalized value of benefits
$ 427 million
Hunting ..... $280 million
Primary non-consumptive trips .. $147 million

INDIRECT BENEFITS FOR THE ECONOMY



Wildlife-related expenditures contributed $240 million to Saskatchewan's Gross Business Production in 1981. The general indicator of economic activity represents both final and intermediate industrial production generated in the business sector. Every dollar spent on wildlife-related activities created $1.40 of gross production in the business sector.

The expenditures of wildlife participants contributed $143 million to the Gross Domestic Product (GDP at market price) of Saskatchewan in 1981.

The economic impacts reflected in Gross Business Production and the Gross Domestic Product generated 4,411 jobs during 1981. Approximately 85% of these would be wage or salary earning jobs, while the remainder would be non-paid jobs such as those filled by working owners, family members and partners.

The jobs generated as a result of public participation in wildlife-related activities amounted to $80 million in gross personal income to residents of Saskatchewan. This accounts for almost 60% of the amount contributed to the GDP reported above.

Expenditures by Saskatchewan participants on wildlife-related economic activities resulted in federal and provincial governments receiving $23 million in revenues from direct and indirect taxes net of subsidies.

6.0 Attitudes Toward Wildlife

The attitudes held by Saskatchewan people toward wildlife were also a concern of this survey. In this section the level of interest shown in participating in non-consumptive, consumptive or wildlife organization activities is presented. Respondents were asked to indicate if they would be interested in participating in such non-consumptive activities as watching wildlife, feeding, photographing or observing wildlife. In a similar manner, respondents were asked about consumptive activities such as collecting wildlife specimens, hunting or trapping, and membership activities like joining a club or contributing to organizations that protect or maintain wildlife. The level of interest reported allowed an estimation of the potential demand for wildlife-related activities.

Respondents were also asked to indicate how important the issues of maintaining abundant wildlife and preserving endangered species were to them. This section presents the reported feelings of the respondents regarding these matters.

6.1 Attitudes Regarding Wildlife Populations

In 1981, about 83.0% of the Saskatchewan population indicated they felt it was very or fairly important to maintain abundant wildlife populations (see Figure 6.10). When asked to indicate how important preserving endangered species was to them, 84.0% reported it was very or fairly important (see Figure 6.11).

As indicated in Tables 6.11 and 6.12, it is interesting to note that fewer people in the older age groups felt that maintenance of abundant populations and the preservation of endangered species is important, and showed more indecision. Similar attitudes were indicated by those with grade 8 education or less.

Figure 6.10. Attitudes of Saskatchewan People in 1981 Regarding the Importance of Maintaining Abundant Wildlife Populations.

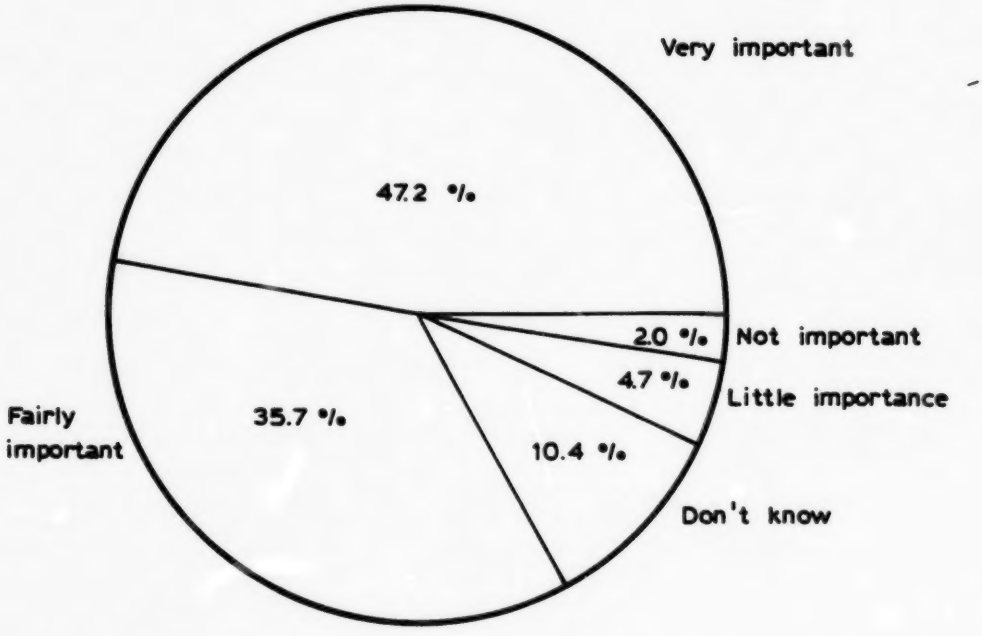


Figure 6.11. Attitudes of Saskatchewan People in 1981 Regarding the Importance of Preserving Endangered Species.

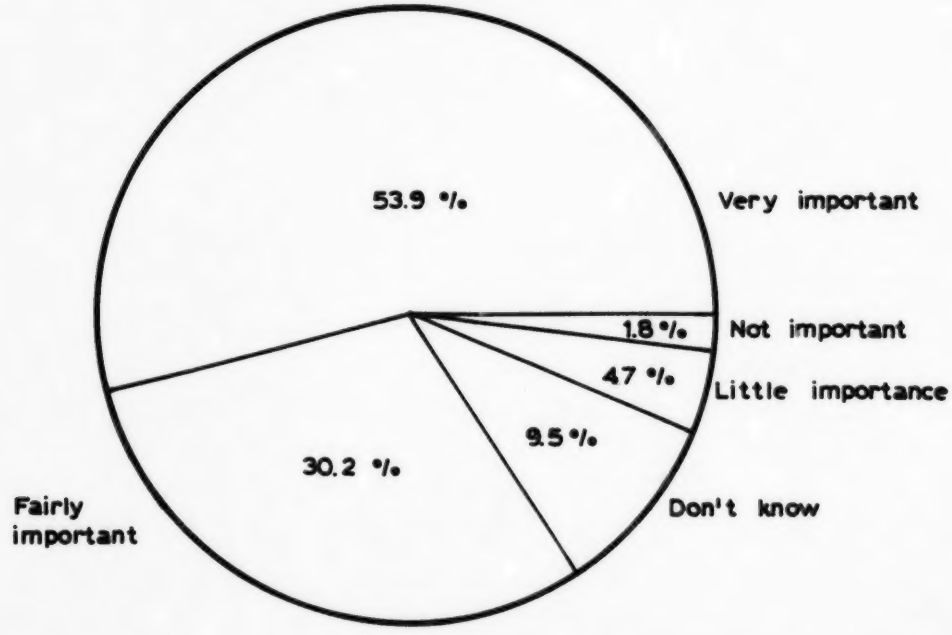


Table 6.11. Attitudes Regarding the Importance of Preservation of Endangered Species by Respondents' Age and Education.

Characteristic	Attitude			
	Very Important or Fairly Important	Of Little or No Importance	Don't Know	Total
All Respondents	84.0%	6.4%	9.5%	100%
Age				
15-19 yrs	88.2%	4.7%	7.1%	100%
20-24 yrs	89.3%	4.9%	5.8%	100%
25-34 yrs	90.4%	5.1%	4.6%	100%
35-44 yrs	89.0%	5.5%	5.6%	100%
45-54 yrs	83.3%	7.8%	9.0%	100%
55-64 yrs	77.9%	8.9%	13.2%	100%
65+	69.4%	8.5%	22.2%	100%
Education Level				
0-8 yrs	70.7%	9.8%	19.5%	100%
Some Secondary	86.6%	6.0%	7.4%	100%
Some Post Secondary	89.7%	4.9%	5.4%	100%
Post Secondary Diploma	91.1%	3.9%	5.0%	100%
University	92.4%	3.8%	3.7%	100%

Table 6.12. Attitudes Regarding the Importance of Abundance of Wildlife Being Maintained by Respondents' Age and Education.

Characteristic	Attitude			
	Very Important or Fairly Important	Of Little or No Importance	Don't Know	Total
All Respondents	82.8%	6.8%	10.4%	100%
Age				
15-19 yrs	84.4%	5.5%	10.1%	100%
20-24 yrs	88.1%	6.1%	5.8%	100%
25-34 yrs	90.5%	4.5%	5.0%	100%
35-44 yrs	87.4%	5.4%	7.2%	100%
45-54 yrs	82.8%	8.3%	8.8%	100%
55-64 yrs	77.6%	9.2%	13.2%	100%
65+	67.3%	9.3%	23.5%	100%
Education Level				
0-8 yrs	67.4%	10.4%	22.2%	100%
Some Secondary	85.9%	6.3%	7.8%	100%
Some Post Secondary	88.9%	5.5%	5.6%	100%
Post Secondary Diploma	91.0%	3.8%	5.2%	100%
University	92.2%	3.6%	4.2%	100%

6.2 Attitudes Regarding Wildlife-Related Activities

Saskatchewan residents indicated high levels of interest in wildlife-related activities. Non-consumptive wildlife-related activities (see Figure 6.20) were the most popular, with 84.0% of the population expressing some or great interest in participating in 1981. Thirty-four percent indicated some or great interest in participating in consumptive wildlife-related activities (see Figure 6.21). However, just 14.8% of Saskatchewan residents had participated in consumptive activities during the year. The majority of those expressing some or great interest were male, and those between the ages of 15 and 45 were also disproportionately represented. Rural residents showed slightly more interest in consumptive wildlife activities.

The level of interest in participating in consumptive wildlife-related activities in Saskatchewan (34.0%) appears to exceed that for Canadians in general, 26.9% of whom indicated some or great interest in consumptive activities.

Ten percent of Saskatchewan residents indicated they participated in some type of wildlife-related organization. However, 47.8% (see Figure 6.22) indicated some or great interest in participating in a wildlife-related organization. The profile of those interested in participating in a wildlife organization is similar to those interested in consumptive activities - they are predominantly male, between the ages of 15 and 45.

The obvious difference between actual participation and expressed interest suggests a large pool of potential participants for consumptive wildlife-related activities and wildlife organization memberships.

Figure 6.20. Level of Interest of Saskatchewan Residents in Participating in Non-Consumptive Wildlife-Related Activities in 1981.

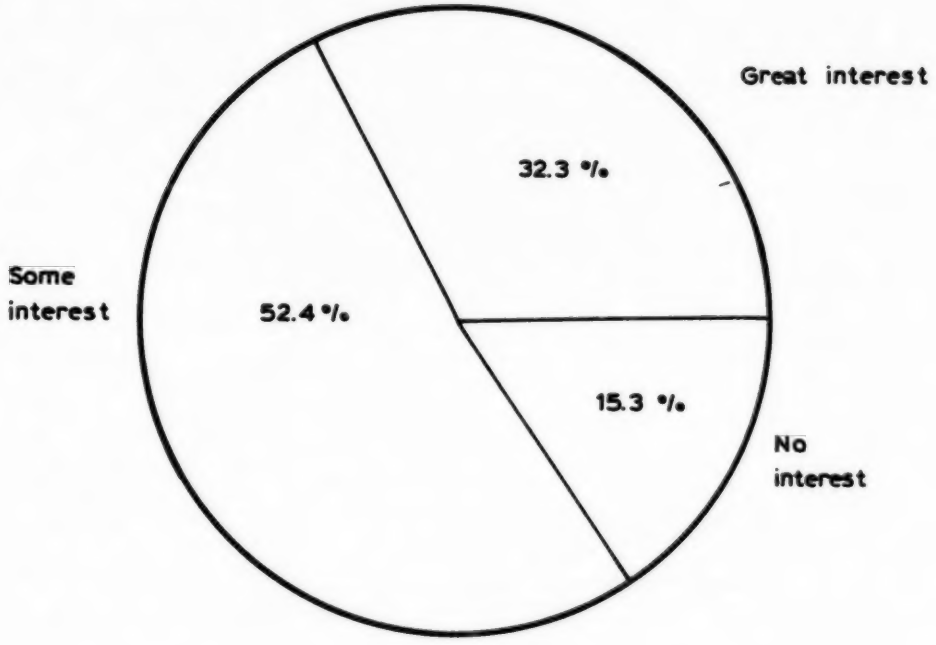


Figure 6.21. Level of Interest of Saskatchewan Residents in Participating in Consumptive Wildlife-Related Activities in 1981.

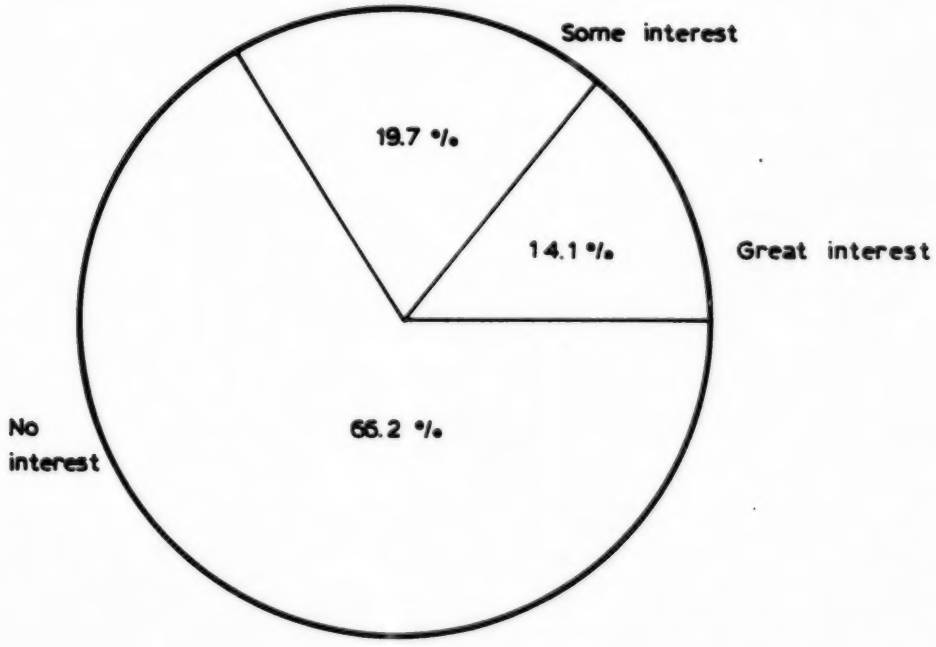
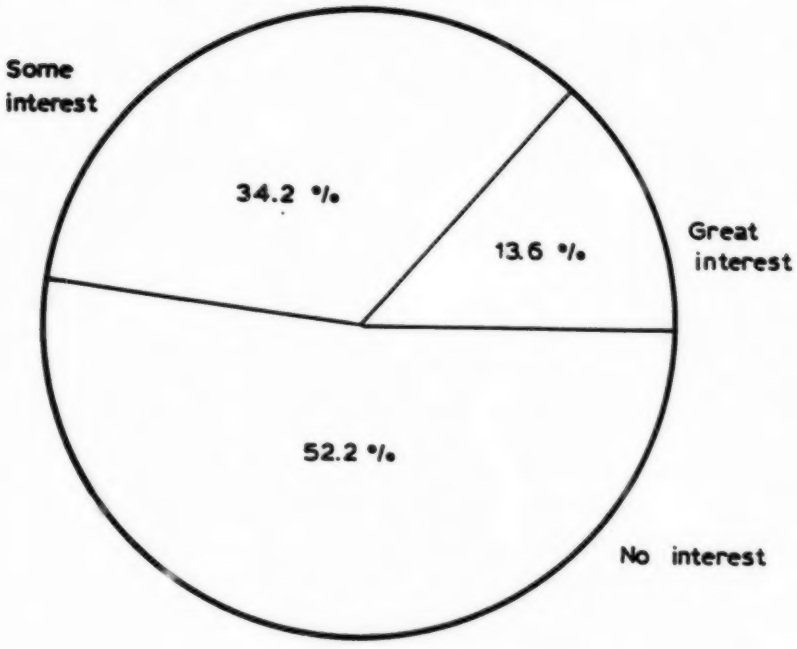


Figure 6.22. Level of Interest of Saskatchewan Residents in Participating in Wildlife-Related Organizations in 1981.



7.0 Conclusion

7.1 Overview of Findings

The fact that such a majority of Saskatchewan residents took part in wildlife-related activities in 1981 was one of the most interesting findings of this survey. A correspondingly high percentage of people felt that maintenance of abundant wildlife populations (83.0%) and preservation of endangered species (84.0%) is important or very important. These statistics indicate the high value placed on wildlife in Saskatchewan.

Closer analysis revealed that more people participated in wildlife-related activities of a casual nature. Logically, the number of participants in the different types of activities decreased with the amount of effort required to pursue that particular activity. The highest rate of participation was in indirect activities, such as watching T.V., reading about wildlife, visiting a zoo or game farm, purchasing wildlife art or crafts, or membership in a wildlife organization. Participants closely resembled the general profile of Saskatchewan residents. The second most popular were residential in nature - watching, studying or photographing wildlife, feeding wildlife, or maintaining wildlife areas. These activities could occur locally, without requiring excessive travel or preparation. Consequently, a large number of days, 25.4 million or 54.9 days per participant were spent on residential activities, although relatively few dollars were spent. Older people spent more days on average at these types of activities.

Incidental encounters with wildlife were reported by the next largest group of people. These encounters occurred during some other activity, reportedly adding to the enjoyment of that activity. Not surprisingly, rural residents more often reported incidental wildlife encounters. The least amount of money, both in total and per participant, was spent on this type of activity.

Some Saskatchewan residents very actively sought out contacts with wildlife and engaged in activities that required a good deal of commitment in terms of time and money. Those who took primary non-consumptive or consumptive trips incurred expenditures that accounted for about 81.0% of the estimated $172.6 million spent on wildlife-related activities. These activities tended to attract unique groups of people whose profiles differed somewhat from that of the general population. Participants in primary, non-consumptive trips was more popular with males between 25 and 34 years of age, and those with an education beyond the secondary level. Hunters were more likely to be male rural residents between 15 and 44 years of age, with elementary or secondary schooling. However, people between 55 and 64 years of age spent a substantially higher number of days hunting on average.

The results also provided conclusive evidence that wildlife provides substantial economic benefit, not only to the people who personally enjoy the resource, but to the Saskatchewan economy as a whole. Although the economic benefits have been quantified only for 1981, with sustained wildlife management efforts, benefits of a similar or greater magnitude should be produced year after year.

Another interesting finding was that for some types of activities, interest in participation exceeded actual participation. Interest in participating in consumptive activities was expressed by 33.8% of Saskatchewan residents, while just 14.8% had hunted in 1981. The discrepancy between interest and actual participation in wildlife organizations was even greater. Forty-seven percent expressed interest in being a member in a wildlife organization while just 9.4% of the population were actually members in 1981.

7.2 Implications

The results of the 1981 survey have implications for Saskatchewan wildlife managers. Some of the interesting findings and inferences are that:

- wildlife-related activities are a very popular form of recreation for the general Saskatchewan populace. This interest generally transcends all ages and socio-economic levels, and was expressed by both urban and rural residents.

- non-consumptive and incidental wildlife-related activities are the most popular. These activities demand that an abundance of diverse species throughout the province be maintained. As well, concern has been expressed by the vast majority of Saskatchewan residents for the preservation of endangered species.

- non-consumptive wildlife-related activity is readily participated in on a residential and incidental basis. It seems that these types of recreation are greatly enjoyed by a large segment of Saskatchewan residents when they occur, but are not always actively sought out. The implication is that provision of information on and opportunities for non-consumptive recreation would be utilized and appreciated by the general public.

- the demand for consumptive wildlife recreation surpasses participation rates. As well, interest in belonging to a wildlife organization far exceeds the number of Saskatchewan residents who hold such memberships. Further understanding of the factors involved are required to determine how to resolve this phenomena.

- wildlife-related activities inject a substantial amount of money into the Saskatchewan economy, and should be recognized and managed as such. This survey data provides economic criteria that could be used in evaluating existing wildlife conservation programs, and in directing management and policy making. The results also serve as a reminder of the significant economic benefits that would be at risk if present wildlife population levels and habitats, and current wildlife conservation efforts were allowed to decline.

- wildlife-related activities account for a significant part of the tourism industry. Because of the nature of wildlife-related activities, many of these benefits are felt outside major urban centres and in regions where providing economic stimulus may be most challenging.

- wildlife resources provide a wide range of social benefits, including such diverse aspects as the provision of food to meet subsistence needs, and the provision of artistic inspiration for aesthetics. The exact contribution of wildlife to the quality of life of Saskatchewan residents is difficult to measure. However, this aspect must also be recognized, as the benefits accrue to a very broad cross-section of the Saskatchewan public, playing a role in the lives of almost all people in the province.

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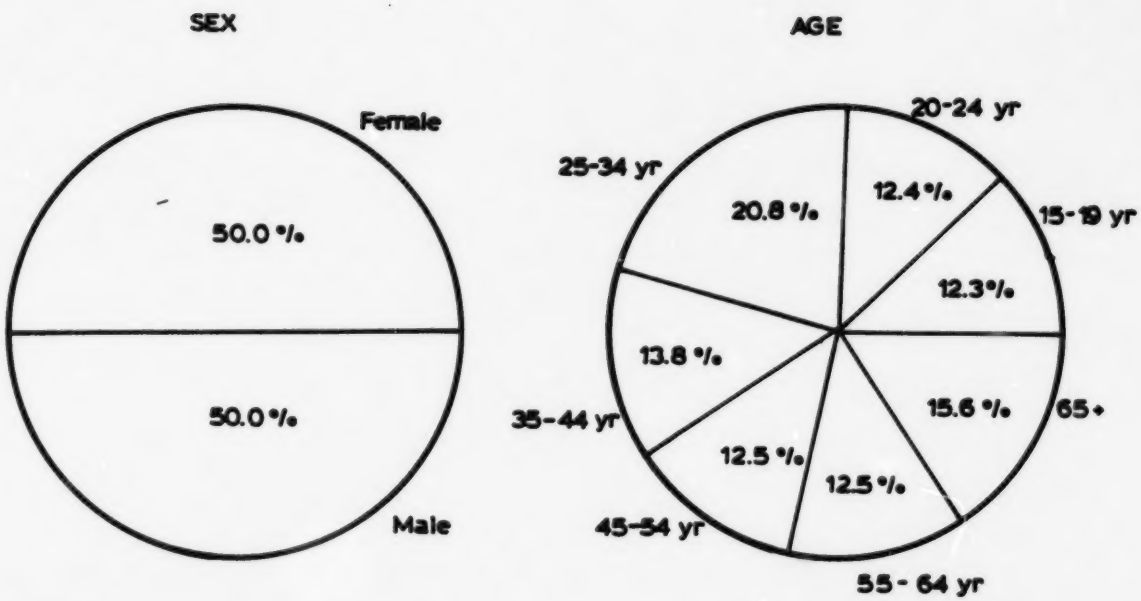
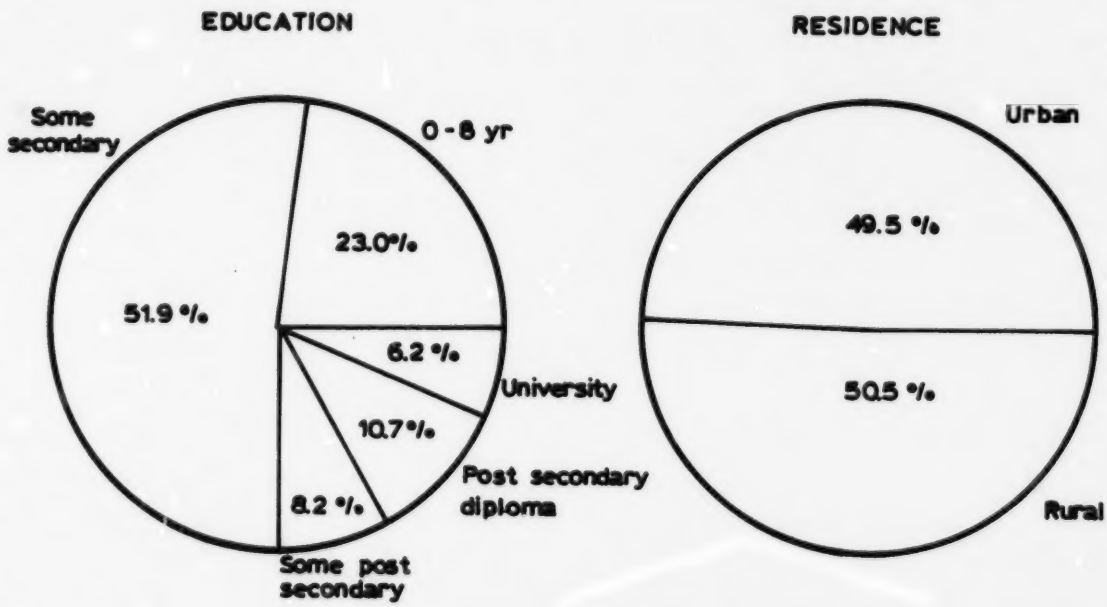
Appendix A.

Appendix A1. A Profile of the Saskatchewan Population Aged 15 Years and Over.

Characteristic	Number	Percent
Sex:		
Males	359,786	50.0%
Females	360,374	50.0%
Age Group:		
15-19	88,270	12.3%
20-24	89,373	12.4%
25-34	150,133	20.8%
35-44	99,606	13.8%
45-54	90,080	12.5%
55-64	90,243	12.5%
65+	112,457	15.6%
Urban	356,394	49.5%
Rural & Spec. Area	363,767	50.5%
Maximum Education Level:		
0-8 Years	165,296	23.0%
Some Secondary	373,519	51.9%
Some Post-Secondary	59,180	8.2%
Post Secondary Cert. or Diploma	77,241	10.7%
University Degree	44,925	6.2%
Saskatchewan Total	720,161	100%

Appendix A2. A Profile of the Saskatchewan Population Aged 15 Years and Over.





Appendix B. Definition of Terms.

WILDLIFE:

In this report wildlife is defined as wildlife animals, not pets or other domesticated animals. It includes waterfowl, other wild birds, small and large mammals and other wildlife in a natural environment. Animals in zoos or game farms were not classified as wildlife in this study with the exception of indirect wildlife-related activities.

Waterfowl: defined as duck, geese, herons, cranes ...

Other Birds: defined as all other wild birds such as robins, sparrows, crows, pigeons, hawks, owls and upland game birds such as grouse, partridge, pheasants ...

Small Mammals: defined as small game and non-game species, for example: rabbits, squirrels, raccoons, foxes, groundhogs, beaver and other furbearers ...

Large Mammals: defined as big game and non-game species, for example: deer, bears, moose, mountain sheep ...

Other Wildlife: defined as all remaining wildlife such as butterflies, frogs, snakes, lizards ... but does not include fish.

CONSUMPTIVE ACTIVITY:

Is defined as an activity whose purpose is the harvesting of wildlife. This usually means hunting wildlife although in some sections of the report collecting wildlife specimens and trapping are included.

NON-CONSUMPTIVE ACTIVITY:

Is defined as activities which do not involve the harvesting of wildlife such as observing, feeding, photographing or studying wildlife. Such activities as INDIRECT, RESIDENTIAL and WILDLIFE-RELATED TRIPS OR

OUTINGS are non-consumptive activities.

WILDLIFE-RELATED ACTIVITIES:

In this report wildlife-related activities are defined as recreational activities that include, in some form, either direct or indirect contact with wildlife. Such activities as INDIRECT wildlife activities, RESIDENTIAL wildlife activities, PRIMARY NON-CONSUMPTIVE trips and OTHER TRIPS OR OUTINGS and CONSUMPTIVE wildlife activity are included in this category.

INDIRECT ACTIVITY:

Is defined as recreational activity which allows the participant to experience wildlife outside its natural setting through a variety of modes: reading, watching films or TV, purchasing art or crafts and visiting institutions dealing with wildlife such as zoos, game farms, aquariums or museums of natural history. This is in contrast to direct contact with wildlife through residential and consumptive activities or during trips or outings.

RESIDENTIAL ACTIVITY:

Is defined as recreational activity that takes place around the home. Such activities as feeding, watching, studying, photographing wildlife or maintaining shrubs or plants for wildlife are included.

TRIP OR OUTING:

A trip is defined as a journey away from the place of residence for more than one day, an outing is defined as a journey away from the place of residence for less than one day.

Primary Non-Consumptive Trip: is defined as a trip taken for the primary purpose of encountering wildlife to watch, feed, photograph or study them.

Other Trip or Outing: is defined as a trip with wildlife encounters, which had a main purpose other than encountering wildlife.

DAY:

Is defined as any part of a day (24 hours) spent participating in a given activity. An example of this definition is: if a hunter hunted 2 hours one day and 3 hours another day, it would be recorded as 2 days of hunting. If someone hunted 2 hours in the morning and 1 hour in the evening of the same day, it would be considered 1 day of hunting.

WILDLIFE-RELATED ORGANIZATION:

Is defined to include organizations such as a naturalist or conservation organization or a sportsman's club.

NATURAL AREA:

Is defined to include areas such as a woodlot, hedge, marsh, open field or similar natural area which provides food or shelter for wildlife.

ECONOMIC TERMS:

Direct Benefits: the annual economic value of the enjoyment received by participants in wildlife-related recreational activities. It is based on people's willingness to pay a sum of money, net of participation costs, to pursue the activities.

Capitalized Value: the amount of capital needed to generate in perpetuity an annual sum of money equivalent to the direct benefits received by participants in 1981 based on a return rate (discount rate) of 10%. It is a conservative estimate of the sum of money required to

produce a yearly return sufficient to replace the direct benefits that would be lost if wildlife-related recreational activities were no longer available.

Indirect Benefits: the impacts on the national or provincial economy resulting from the expenditures of participants in wildlife-related recreational activities. They were computed by Statistics Canada and are measured by the five indicators that follows.

Gross Business Production: measures the additional overall business activity within Canada or the province generated by expenditures. It includes the total value of both final and intermediate goods and services produced in the business sector.

Gross Domestic Product (GDP): measures the total value at market price of production of final goods and services within Canada or the province resulting from participants' expenditures. All duplications such as intermediate expenses are eliminated. It is one of the most widely used measures of economic performance.

Government Revenue From Taxes: the provincial figures include all the direct and indirect taxes net of subsidies levied by the provincial and local governments resulting from the economic stimulus generated by wildlife-related activities. The national figure includes all federal, provincial, and local direct and indirect taxes net of subsidies.

Number of Jobs: represents the number of jobs of undetermined duration supported by participants' expenditures in 1981.

Personal Income: a component of GDP that represents the sum of all incomes received by residents of Canada or the provinces resulting from participants' expenditures.

Appendix C. Tables of Coefficients of Variation for Estimates.

The tables in this appendix allow an approximate coefficient of variation (CV) to be calculated for estimates of participation rates, days of activity, expenditures, and attitudes. The footnotes with each table give a brief description of their use but a more complete discussion is given in Section 6.1 of The Importance of Wildlife to Canadians: The User's Guide to the Methodology of the 1981 National Survey (Filion, et al. 1985).

Table D1. CRUDE SAMPLING VARIABILITY TABLES FOR VALUE OF WILDLIFE SURVEY

SASKATCHEWAN

NUMERATOR OF PERCENTAGE ('000)	ESTIMATED PERCENTAGE													
	0.1%	1.0%	2.0%	5.0%	10.0%	15.0%	20.0%	25.0%	30.0%	35.0%	40.0%	50.0%	70.0%	90.0%
1	********	58.9	58.6	57.7	56.2	54.6	53.0	51.3	49.5	47.7	45.9	41.9	32.4	18.7
2	********	41.7	41.4	40.8	39.7	38.6	37.4	36.3	35.0	33.8	32.4	29.6	22.9	13.2
3	********	34.0	33.8	33.3	32.4	31.5	30.6	29.6	28.6	27.6	26.5	24.2	18.7	10.8
4	********	29.5	29.3	28.9	28.1	27.3	26.5	25.6	24.8	23.9	22.9	20.9	16.2	9.4
5	********	26.3	26.2	25.8	25.1	24.4	23.7	22.9	22.2	21.3	20.5	18.7	14.5	8.4
6	********	24.1	23.9	23.6	22.9	22.3	21.6	20.9	20.2	19.5	18.7	17.1	13.2	7.6
7	********	22.3	22.2	21.8	21.2	20.6	20.0	19.4	18.7	18.0	17.3	15.8	12.3	7.1
8	**********	20.7	20.4	19.9	19.3	18.7	18.1	17.5	16.9	16.2	14.8	11.5	6.6
9	**********	19.5	19.2	18.7	18.2	17.7	17.1	16.5	15.9	15.3	14.0	10.8	6.2
10	**********	18.5	18.2	17.8	17.3	16.7	16.2	15.7	15.1	14.5	13.2	10.3	5.9
11	**********	17.7	17.4	16.9	16.5	16.0	15.5	14.9	14.4	13.8	12.6	9.8	5.6
12	**********	16.9	16.7	16.2	15.8	15.3	14.8	14.3	13.8	13.2	12.1	9.4	5.4
13	**********	16.3	16.0	15.6	15.1	14.7	14.2	13.7	13.2	12.7	11.6	9.0	5.2
14	**********	15.7	15.4	15.0	14.6	14.2	13.7	13.2	12.8	12.3	11.2	8.7	5.0
15	**********	14.9	14.5	14.1	13.7	13.2	12.8	12.3	11.8	10.8	8.4	4.8
16	**********	14.4	14.0	13.6	13.2	12.8	12.4	11.9	11.5	10.5	8.1	4.7
17	**********	14.0	13.6	13.2	12.8	12.4	12.0	11.6	11.1	10.2	7.9	4.5
18	**********	13.6	13.2	12.9	12.5	12.1	11.7	11.3	10.8	9.9	7.6	4.4
19	**********	13.2	12.9	12.5	12.1	11.8	11.4	11.0	10.5	9.6	7.4	4.3
20	**********	12.9	12.6	12.2	11.8	11.5	11.1	10.7	10.3	9.4	7.3	4.2
21	**********	12.6	12.3	11.9	11.6	11.2	10.8	10.4	10.0	9.1	7.1	4.1
22	**********	12.3	12.0	11.6	11.3	10.9	10.6	10.2	9.8	8.9	6.9	4.0
23	**********	12.0	11.7	11.4	11.0	10.7	10.3	10.0	9.6	8.7	6.8	3.9
24	**********	11.8	11.5	11.1	10.8	10.5	10.1	9.7	9.4	8.5	6.6	3.8
25	**********	11.5	11.2	10.9	10.6	10.3	9.9	9.5	9.2	8.4	6.5	3.7
30	**********	10.5	10.3	10.0	9.7	9.4	9.0	8.7	8.4	7.6	5.9	3.4
35	**********	9.8	9.5	9.2	9.0	8.7	8.4	8.1	7.8	7.1	5.5	3.2
40	**********	8.9	8.6	8.4	8.1	7.8	7.5	7.3	6.6	5.1	3.0
45	**********	8.4	8.1	7.9	7.6	7.4	7.1	6.8	6.2	4.8	2.8
50	**********	7.9	7.7	7.5	7.3	7.0	6.8	6.5	5.9	4.6	2.6
55	**********	7.6	7.4	7.1	6.9	6.7	6.4	6.2	5.6	4.4	2.5
60	**********	7.3	7.0	6.8	6.6	6.4	6.2	5.9	5.4	4.2	2.4
65	**********	7.0	6.8	6.6	6.4	6.1	5.9	5.7	5.2	4.0	2.3
70	**********	6.7	6.5	6.3	6.1	5.9	5.7	5.5	5.0	3.9	2.2
75	**********	6.3	6.1	5.9	5.7	5.5	5.3	4.8	3.7	2.2
80	**********	6.1	5.9	5.7	5.5	5.3	5.1	4.7	3.6	2.1
85	**********	5.9	5.7	5.6	5.4	5.2	5.0	4.5	3.5	2.0
90	**********	5.8	5.6	5.4	5.2	5.0	4.8	4.4	3.4	2.0
95	**********	5.6	5.4	5.3	5.1	4.9	4.7	4.3	3.3	1.9
100	**********	5.5	5.3	5.1	5.0	4.8	4.6	4.2	3.2	1.9
125	**********	4.7	4.6	4.4	4.3	4.1	3.7	2.9	1.7
150	**********	4.2	4.0	3.9	3.7	3.4	2.6	1.5
200	**********	3.5	3.4	3.2	3.0	2.3	1.3
250	**********	3.0	2.9	2.6	2.1	1.2
300	**********	2.4	1.9	1.1
350	**********	2.2	1.7	1.0
400	**********	1.6	0.9
450	**********	1.5	0.9
500	**********	1.5	0.8

NOTES:

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(1) SAMPLING VARIABILITIES (COEFFICIENTS OF VARIATION) ARE IN PERCENTS.  00000550
(2) TO DETERMINE SAMPLING VARIABILITIES FOR ESTIMATES OF TOTALS, LOCATE  00000560
    THE ROW CLOSEST TO THE ESTIMATED TOTAL. THE LEFT-MOST COLUMN GIVES    00000570
    THE SAMPLING VARIABILITY.                                            00000580
(3) TO DETERMINE SAMPLING VARIABILITIES FOR ESTIMATES OF PERCENTAGES,    00000590
    USE THE ROW CLOSEST TO THE NUMERATOR OF THE PERCENTAGE AND THE       00000600
    COLUMN CLOSEST TO THE PERCENTAGE.                                    00000610
(4) SAMPLING VARIABILITIES IN THIS TABLE ARE CRUDE INDICATORS AND IN     00000620
    GENERAL ARE HIGHER THAN THOSE THAT WOULD BE OBTAINED USING MORE      00000630
    EXACT TECHNIQUES. UNDER NO CIRCUMSTANCES ARE THEY OFFICIAL.          00000640
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(From The Importance of Wildlife to Canadians: The User's Guide to the Methodology of the 1981 National Survey, Filion et al, 1985. pp. 341-342)

Table D2. Factors to Calculate Approximate Coefficients of Variation for Quantitative Saskatchewan Data.

Item Measured X	Pre-exponent Factor A	Exponent B
Number of Days of Participation	530.03	-0.2797
Expenditures Around Home or Incidental Encounters	240.1309	-0.4460
Consumer Surplus	1146.12	-0.2918

An approximate coefficient of variation for an estimated X is given by the formula Ax^B:

eg. the estimated total days spent participating in "residential wildlife-related activities" for Saskatchewan is 22,200,000. An approximate coefficient of variation for this estimate is:

$$530.03\ (22{,}200{,}000)^{-0.2797} = 4.6730$$

Table D3. Bounds on the Coefficient of Variation for Expenses on Wildlife Organizations and Non-Consumptive Primary Trips in Saskatchewan.

Activity/Item ($'000)	Coefficient of Variation Less Than 16.5%	Coefficient of Variation Less Than 25%
Expenses on Wildlife Organizations	7,000	2,000
Non-Consumptive Primary Trip Expenses		
Total	NR[1]	56,000
Transportation	9,000	2,700
Accommodation	1,500	600
Food	2,500	1,000
Equipment	NR	NR
Other	2,000	400

[1]NR - Coefficient of variation is unpredictable. No bound is provided. If the estimate is greater than the figure in the table, the CV is bounded by the column heading; eg. if an expenditure of $56 million is estimated for a portion of the Saskatchewan population, the CV for this estimate is less than 25%.

Table D4. Bounds on the Coefficient of Variation for Hunting Expenses for Saskatchewan.

Item ($'000)	Coefficient of Variation Less Than 16.5%	Coefficient of Variation Less Than 25%
Waterfowl		
Total	6700	1800
Transportation	3000	900
Accommodation	NR[1]	NR
Food	NR	600
Equipment	1500	900
Other	2000	1100
Other Birds		
Total	2700	1600
Transportation	1000	500
Accommodation	NR	100
Food	NR	300
Equipment	1000	500
Other	NR	800
Small Mammals		
Total	NR	NR
Transportation	NR	NR
Accommodation	NR	NR
Food	NR	NR
Equipment	NR	NR
Other	NR	NR
Large Mammals		
Total	NR	18000
Transportation	4000	900
Accommodation	NR	NR
Food	NR	NR
Equipment	NR	9000
Other	3200	1800

[1]NR - Coefficient of variation is unpredictable. No bound is provided. If the estimate is greater than the figure in the table, the CV is bounded by the column heading; eg. if an expenditure of $1.6 million is estimated for total expenditures for hunting other birds, the CV for this estimate is less than 25%.